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SUBJECT 2744

OUTLINE OF INVESTIGATION
FOR
SAFETY OF PRODUCTS IN SMART ENVIRONMENTS

Issue No. 2

October 11, 2011

Summary of Topics

This second issue of the Outline of Investigation for Safety of Products in Smart Environments, Subject 2744, includes a revision to the Electrostatic Discharge Immunity Test.

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INTRODUCTION

1 Scope

1.1 These requirements apply to:

- a) Products intended to receive and react to communication data in the smart environment, also known as smart enabled products;
- b) Products identified as being compatible with communication environments associated with (a), or those which are not smart enabled, but compatible with smart enabled products; and
- c) Products intended to interact with communication data and control products that do not otherwise react to communication data.

1.2 Products covered by 1.1(a) are commonly identified as “smart” products or “smart enabled” and are intended to interact with the “Smart Grid” described by the Energy Independence and Security Act of 2007.

1.3 Products covered by 1.1(b) are not specifically identified for interaction with the “Smart Grid” but are identified as being compatible with that environment. Such products incorporate features such that they do not interact with or modify responses of other products connected to the power distribution system, and they are not adversely affected by other devices or communications associated with the environment in which they are installed.

1.4 Products covered by 1.1(c) are enabler devices intended to interact with the “Smart Grid” and interface with devices that are not otherwise smart enabled.

1.5 These requirements supplement those specified in the applicable end-product Standard for Safety. Where the end-product Standard includes requirements that achieve the intent of these requirements as applicable to the specific product, the end-product Standard takes precedence.

SMART ENVIRONMENT INTEGRATION ASSESSMENT

2 General

2.1 In order for a manufacturer to claim safety in the smart environment, the manufacturer shall have a management system that addresses and documents system safety considerations.

2.2 The manufacturer shall specify the functions and interactions of the product that are related to operation in a smart environment.

2.3 The manufacturer shall conduct a system safety analysis in order to identify hazards and their potential hazardous events in consideration of product integration in a smart environment. The results of the system safety analysis shall be documented.

2.4 System safety analysis shall be concerned with the safety of the Smart Grid system in order to determine how the system's safety depends on interactions with the product.

2.5 System safety analysis shall also be concerned with the safety of the product itself in order to determine how the product's safety depends on interactions with the Smart Grid system.

3 Functional Safety

3.1 From the system safety analysis specified in Section 2, the safety related functions of the product shall be identified and a safety integrity level assigned to each function in accordance with the Standard for Functional safety of electrical/electronic/programmable electronic safety-related systems, IEC 61508.

3.2 Each safety related function shall be implemented commensurate with the safety integrity level in accordance with the Standard for Functional safety of electrical/electronic/programmable electronic safety-related systems, IEC 61508.

PERFORMANCE

4 Resistance to Environmental Noise Test

4.1 General

4.1.1 A product shall demonstrate immunity when exposed to the conditions described in this Section. The intent of this Section is to configure and operate the product under normal conditions and determine that, during and after exposure to the electromagnetic environment, the product:

- a) Functions or fails safely; and
- b) Experiences no reduction of protective functionality.

4.1.2 The selection of the test level shall be based on the intended use. The levels applied to a device are based on the intended use environment. Each test in this Section specifies test levels for both light industrial or residential and industrial or commercial applications. If the installation or use environment is not known, then the industrial or commercial test levels are to be applied.

4.1.3 Use environments shall be clearly documented in the installation and user manuals.

4.1.4 The same representative product shall be tested for all of the tests described in 4.2 – 4.7.

4.1.5 The product shall be tested as described in 4.2 – 4.9 and shall not exhibit risks of fire, electric shock, or personal injury. A risk is considered to be exhibited if any of the following occurs:

- a) Risk of fire, as evidenced by charring of the fire indicator specified in the applicable end-product Standard for Safety;
- b) Risk of electric shock, as evidenced by exceeding the leakage current limit or experiencing dielectric breakdown specified in the applicable end-product Standard for Safety; or
- c) Risk of personal injury, as evidenced by a non-compliant mechanical hazard specified in the applicable end-product Standard for Safety.